WG1 Summary Report

[Experimental and Accelerator Demonstrations]

Remote Operations Workshop

Shelter Island, NY

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Participants / Contributors in WG1 Sessions

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Also greatly benefited from joint sessions with WG2 and WG3.

WG1 Charges

as given by the organizers

- Discuss and evaluate concrete examples of **Remote Operations Demonstration Projects** for accelerators and experiments. Imagine that you are preparing to remotely operate an accelerator and/or an experiment that is NOT located at your laboratory. What are the tools, and the communication challenges? Accelerator and experimental facilities with active remote operations projects include: CMS, FNPL, RHIC, SNS and TTF

- In addition, there are number of astronomical and industrial projects of direct relevance. ← We have not really gotten around to touch these.

What we actually did :

- Hear presentations given during the WS
- Try to digest the contents of these presentations.

- Tabulate possible GAN-oriented experiments (existing, proposed or new). Compile a list of experiments with
  - Timescale, subject of focus, players, status, benefits for GAN, limitations, resource requirements (existing or new), requirements on the control architecture, etc.

- Attempt to extract some conclusions or recommendations by reviewing the table of currently conceived GAN-oriented experiments.

- Review the required functionality and capacity for standard elements considered in GAN-type remote OPS, notably the console.
- Examine the possible benefits of GAN-oriented R&D for existing accelerators.

Presentations with Close Relevance to WG1

- R. Bacher – VC system at DESY/TTF control;
- -- Thoughts about Remote OPS: ENG and OPs
- C. Matthias – Proposed GAN Projects for TTF
- J. Galambos – SNS Remote Operation Experience
- E. Hofer – Overview on IP-based Video
- A. Hutton – Remote SRF Operation
- P. Ingrassia - Operational Concerns
- U. Joshi – Virtual Control Room for CMS
- S. Loken – Collaborative Tools for GAN
- F. Pilat – RHIC Remote Operations;
- -- List of Tests
- K. Rehlich – GAN at TTF
- T. Wilksen – CLEO Remote Shifting

Recurring Question: What exactly is GAN?

- Discussion initiated by R.Bacher's "Thoughts about remote operations"

- Fairly clear view from DESY colleagues:
  - Remote operation for bulk part of regular runs.
- Some concerns or different views (ref. Peter Ingrassia). An alternative:
  - Remote monitoring / diagnostics by experts who support centralized OPS team on site.

- This topic has a very close coupling w.r.t. organizational structure of an LC collaboration : → difficult to come to a rapid, definitive resolution.
- OTOH, would different thoughts on German-, American-, or Japanese-GANs lead to really wildly different notions on "required demonstration experiments"?
  - Answer: most likely not so.

- Many similar issues whether it is "distributed OPS" or "distributed support teams". If the former is technically possible, so the latter is. → Decided to proceed with technical (I.e. non-political) discussions with the former in mind for now.

- ***Note: in-depth reviews of operational / organizational issues, as triggered by the GAN proposal and others, deserve a separate, dedicated forum with participation by all whose life may be affected.***

GAN-Oriented Console - One of the basic building blocks

We care, because this is one of the things whose adequate technical implementation needs to be firmly established through GAN-oriented R&D.

- Video, audio with whiteboard and chatting capability.
- GUI-like environment – Unix/Linux as the minimum, for instance .
- Connection to control the hardware, access to e-logs, documentation, notes.
- Compatibility and availability of interface equipment across the collaboration.
- Some kind of mechanisms to ensure that everyone can run the most up-to-date, “official” control SW. ← How we do this depends on the architecture of the system…(CVS, etc)
- Sufficient network bandwidth. ← needs quantification, of course, but not by us now.
- A corner in the CR to have this thing placed

Compiled Table of Experiments under Execution, Proposal, Proto-proposal, etc

- Look at the Excel spreadsheet compiled by J.Haggerty.
- “Fully detailed version” on the web
- “Thinned-down version” available for quick look, too.

Possible Benefits of GAN-oriented R&D for Existing Accelerators

- Remote access to the data / equipment that are not currently available remotely.
- Exchange and sharing of knowledge, tools, system ideas and experience among those who are involved.
- GAN console as an education tool.
  - Expect improved team capability on: system diagnosis, trouble-shooting, accelerator development efforts, or training.
- Analysis of requirements for successful GAN can stimulate improvement in operational and managerial practice of non-GAN-based accelerators.
- Imagine the ability to look at operations in any machine around the world from any control room.

Our Conclusions (for now)

- Suggested experiments are good first steps, calling for a review of their success/problems in about a year time scale.
- However, currently listed experiments, when put together, would not address **all** the issues with a GAN-type operation at major accelerator facilities, (particularly if it is “remotely distributed OPS centers” rather than “remotely distributed expert/support centers”).
  - Most proposed exp are for “planned campaign actions” for a limited period.
  - I.e. Not much provision for long-term set-up or “stress testing”, addressing unexpected failure recovery / diagnostic actions
- Hence, a serious exercise of remote operation/maintenance of an accelerator facility is desirable, before claiming we are technically ready for full GAN implementation.
- Light sources in general, with similar hardware functionality and many with similar EPICS-based control systems, could be a candidate platform for such an exercise.
- Similar exercises of remotely operating HEP experiments are worthwhile.

Continued…

Somewhat Random Conclusions (continued)

- We recommend deployment of consoles in control rooms of several existing accelerators, capable of some limited range of GAN interactions.

- More efforts (parallel or joint) are also needed on development and validation of collaborative tools.

- To go beyond the list of experiments compiled during this WS, and to proceed towards more advanced experimental studies of GAN-type technical issues, it is desirable to establish some sort of an international coordination body.

This is all, with great thanks to the organizers and to particularly the tech support by T.Satogata.